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UNITED STATES DEPARTMENT OF AGRICULTURE
Weather Bureau
Instrument Division

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U. S. Department of Agriculture

SPECIFICATIONS FOR SLING PSYCHROMETERS, METEOROLOGICAL
with Corrosion Resisting Steel Backs.

The sling psychrometer will be made by mounting upon a metal back two of the thermometer tubes described in detail in paragraphs 1 to 11 following:

1. Stems- The stems shall be of glass, about $13/64$ inch in diameter (between $12/64$ inch and $14/64$ inch).
2. White strip- To facilitate readings a strip of white glass shall be provided running the full length of the stem back of the bore.
3. Bulbs- Bulbs must be cylindrical in form, not more than $2/10$ inch in diameter nor longer than $7/8$ inch, of clear glass of a quality that does not change appreciably with age.
4. Neck- In order to make provision for securely tying a muslin to the bulb, a neck of smaller diameter than the bulb below or the stem above must be formed just above the junction of stem with bulb.
5. Length- Length of stem and bulb combined shall be $9-1/4$ inches (between 9 and $9-1/2$ inches).
6. Filling- The thermometer must be filled with pure mercury. The space not occupied by the mercury to be a vacuum.
7. Terminal nib- As a provision for holding the tube in its proper relation to the back when subsequently mounted, a nib will be formed at the upper end of the stem.
8. Graduations- All lines, figures, and letters to be etched, clean cut and distinct. Graduations shall be to whole degrees Fahrenheit. The first and each succeeding 5 and 10 degree line to be longer than the remaining lines. Graduations to be numbered at each multiple of 10 degrees, numbers below zero to be preceded by the minus sign. Figures shall be etched to the right of the bore, but in a vertical position when the stem is held horizontally with bulb to the left. The lowest line of graduations must be at least $1/2$ inch above the bulb.

Each tube will bear near the upper end a serial number to be indicated in the order, and the initials U. S.

All etchings to be filled with best quality black pigment.

9. Scale options.- The approximate scale, to be specified when the order is placed, will be as follows:

(Sling Psychrometers)

Minus 10 to plus 100 degrees Fahrenheit.
Minus 10 to plus 135 degrees Fahrenheit.
Minus 30 to plus 110 degrees Fahrenheit.
Minus 38 to plus 110 degrees Fahrenheit.
Or the equivalent in Centigrade.

10. Scale error.- The error at any point of the scale must be no greater than the following:

At 32° (ice point)	0.2 degree.
Above 32°	0.3 degree.
Between 32° and 12°	0.3 degree.
Below 12°	0.6 degree.

The change in the error for a distance of 10 degrees must be no greater than 0.3 degree on any part of the scale.

11. Scale length.- The scale will extend over the entire usable length of the tube, about 7 1/2 inches, and will be as open as the scale specified in the order permits. Reasonable tolerances above and below the stated limits will be allowed provided they do not produce an unduly compressed or open scale.

12. Mounting.- Two of the tubes described in paragraphs 1 to 11 will be mounted parallel, and 5/8 inch apart on centers, on a strip of corrosion resisting steel 1/32 inch thick by 29/32 inch wide by 10-1/8 inches long, conforming to Navy Department Specifications 47S20a dated May 28, 1934, symbol designation CRS1, finish No. 6 Commercial polish, Tampico brushed.

In order to make provision for mounting the right hand thermometer tube 1-1/2 inches higher than the left hand tube a section 1/2 inch wide by 1-1/2 inches long must be cut away from the lower right corner, and a notch 1/4 inch wide must extend upward about 3/4 inch to permit the end to be turned up. A well rounded corrugation will be formed lengthwise of the back from a point 1 inch below the upper end to the notch. The lower portions of the glass tubes will project 1-7/8 inches clear of the mounting.

13. Clamps.- Attachment of the upper ends of the tubes will be by means of removable corrosion resisting steel clamps and fillister head screws No. 1-72. The lower portions of tubes will pass through guides formed by drilling suitable holes in the turned up ends of the back.

14. Markings on back- A serial number, the name of purchasing bureau, and also the corresponding serial numbers of the thermometer tubes will be placed legibly on the back.

15. Handle- The psychrometer will be attached through 2 links and snap hook totaling a length of 3 inches, to a well made maple handle. One end of the handle must be provided with a well made bearing on which the psychrometer may rotate. The hole in the back to which the linkage is attached must have edges rounded.

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(Sling Psychrometers)

16. Workmanship- First class and thoroughly finished instruments are required. For example, stems must be straight and of uniform bore and free from scratches. Lines must be clean cut, and straight without ragged edges. Bulbs must be of uniform thickness and joined to the stems in a smooth and workmanlike manner. Metal parts must be free from burrs, cracks, or rough or sharp edges, but not rounded nor beveled to any perceptible degree.

17. Inspection.- Each instrument will be carefully inspected and tested before acceptance; but recognizing the difficulty attending the production of a large number of thermometers that come within the limits prescribed in these specifications, it is stated that while the purchasing bureau or department will in its discretion strictly adhere to said specifications, yet it is not the intention to reject instruments inherently correct and of good workmanship, provided the greater part of the thermometers furnished come within the limits herein prescribed, and prove satisfactory throughout.

18. Ten percent rejection.- It will be understood that failure of 10% or more of the thermometers delivered to meet the specifications herein set forth will subject the entire order to rejection.

19. Prospective bidders will be required to furnish satisfactory evidence of their ability to produce and deliver in the quantity required psychrometers of the character indicated in the above specifications.

20. Ice point.- There must be no change in the ice point measurable by customary methods of testing during a period of 90 days. The right is reserved to delay payment for a period of 90 calendar days for the purpose of making repeat tests to determine shifts of the ice point.

B. C. Kadel,
Chief of Division.

Washington, D. C.
November 12, 1935.

These specifications supersede specifications for sling psychrometers dated October 19, 1934.

